# DEFENSE ACQUISITION UNIVERSITY
## IRM 101 – BASIC INFORMATION SYSTEM ACQUISITION

090114

***Course Learning/Performance Objectives followed by its enabling learning objectives on separate lines if specified.***

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| 1 | **Given definitions of Software-Intensive System, Software Engineering, Acquisition Management, Software Acquisition Management, and the software acquisition management competencies, identify the major categories of software-intensive systems, and the various roles of software acquisition management in acquisition of these software-intensive systems.** |
| | Define a software-intensive system and, using appropriate criteria, classify a system as software-intensive. |
| | List the categories of software-intensive systems. |
| | Define software engineering. |
| | Define and recognize the importance of software acquisition management. |
| 2 | **Given a contemporary information technology and communications environment, describe key aspects of relevant technologies needed for effective DoD IT and software acquisition management activities.** |
| | Describe how computers and communications are merging. |
| | Identify generations of computers. |
| | Define basic terms associated with computer hardware. |
| | Recognize key computer hardware components. |
| | Define basic terms associated with computer software. |
| | Define basic terms associated with computers and networking. |
| | Describe examples of emerging technologies. |
| 3 | **Given legal and regulatory guidance and a category of software-intensive system (Embedded, AIS, C3I) identify relevant laws and DoD policies used to guide their management and acquisition.** |
| | State how Integrated Product Teams (IPTs) can help improve the acquisition of software-intensive systems. |
| | List the requirements of the Clinger-Cohen Act and other key laws |
| | Identify key information and software policies and regulations. |
| | Identify the responsibilities of a Chief Information Officer (CIO). |
| | Identify specific DoD policies related to IT and software management. |
| 4 | **Given descriptions of fundamental architectural concepts, describe how they are defined and their role in the development of software-intensive systems.** |
| | Summarize the role of an Enterprise Architecture. |
| | Describe the "views" of the DoD Architectural Framework (DoDAF). |
| | Identify [the role of] key tools such as DISRonline, LISI and the DoD Metadata Registry. |
| | Describe ways to measure interoperability. |
| | Recognize Open Systems Architecture (OSA) concepts. |
| | Describe the components of the Global Information Grid (GIG). |
| | Describe the role of domain engineering. |
| 5 | **Given a set of objectives and risks for a software-intensive system, choose appropriate system-level acquisition strategies and software development paradigms for it.** |
| | Define the most common systems-level acquisition strategies. [ |
| | Identify the strengths and weaknesses of acquisition strategies. |
| | Relate acquisition strategies to risks. |
| | Define common software development paradigms. |
| | Identify an appropriate paradigm for a given software-intensive system. |
| | Select an appropriate acquisition approach for a given software-intensive system. |
| 6 | **Given descriptions of various categories of software-intensive system, state the commonly-used definitions of software quality and list typical software quality attributes.** |
| | Define three different perspectives on software quality. |
| | Describe ways of determining software size. |
| | Define Error Density and its role as a software quality factor |
| | Recognize typical software quality factors and "ilities." |
| | Identify what influences the choice of software quality factors. |

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| | Define SQA and outline its key processes. |
| | Describe methods and techniques that can influence software quality. |
| 7 | **Given a software acquisition management scenario, explain the rationale for using a software measurement process for project planning and tracking, for software development process assessments, and for improving software products.** |
| | Explain why software measurement is important. |
| | Define the terms "measure," "metric," and "indicator." |
| | Describe three frameworks that provide principles and guidance for software measurement. |
| | Recognize key software measurement concepts. |
| | Summarize common categories of software measures. |
| 8 | **Given descriptions of various software measures, describe how they are used as part of the software acquisition management process.** |
| | Identify broad categories of software measures |
| | Describe ways indicators should be selected |
| | Identifying activities and associated tasks for putting measurement into practice |
| | Describing criteria used to interpret common software measures |
| 9 | **Given descriptions of process maturity and the Capability Maturity Model Integrated (CMMI), describe software process measures derived from the CMMI.** |
| | Describe how standards and maturity models differ. |
| | Describe what is meant by the term “process maturity” |
| | Distinguish between “mature” and “immature” developers |
| | Identify the five levels of the CMMI |
| | Explain CMMI Process Areas |
| 10 | **Given various examples of software indicators, provide possible interpretations of them, identifying issues and possible courses of action.** |
| | Summarize how to interpret software measures |
| | State "Brooks Law." |
| | Describe potential software acquisition problems after viewing a program’s metric data |
| | Describe the role of Technical Performance Measurement (TPM) |
| | Contrast Technical Performance Measurement and software measurement |
| | Define enterprise-level measurement |
| | List key laws mandating enterprise-level measurement |
| 11 | **Given a software-intensive system, describe an appropriate Risk Management process.** |
| | Define the term "Risk Management." |
| | Identify elements and factors to consider in risk management planning |
| | Summarize factors making software risk management difficult |
| | Describe the components of a generic risk management model applicable to information and software-intensive systems |
| | List common risks and their mitigation strategies for information and software-intensive programs |
| 12 | **Given an application domain (i.e., embedded, AIS, C3I) and current policy guidance, identify software safety, security, privacy, and formation Operations issues related to the acquisition and deployment of software-intensive systems.** |
| | Identify typical “critical requirements” for software-intensive systems |
| | Summarize requirements of key laws dealing with critical requirements of security and privacy |
| | Summarize the need for information security and recognize some of the technologies that can be used to improve information security |
| | Recognize how the Common Criteria is used |
| | Summarize the DoD accreditation process |
| | Define key information assurance activities |
| 13 | **Given the description of a typical Systems Engineering Process, describe the key steps used in the design and development of a software-intensive system.** |
| | Identify steps in the Systems Engineering Process |

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| | Explain how software requirements are determined |
| | Recognize the software components of a Word Breakdown Structure (WBS) |
| | Define lifecycle reviews that can be used to help manage software development |
| | Explain Configuration Management (CM) and its role in software development |
| | Summarize requirements of key standards |
| 14 | **Given the description of a typical Systems Engineering Process, describe the key acquisition processes used during the test and evaluation phases of software development.** |
| | Identify common types of software testing |
| | List [describe] Human-Based Testing categories |
| | List [describe] Computer-Based Testing categories. |
| | Describe criteria that can be used to categorize "mature" software |
| | Explain where most software faults originate |
| | Summarize the purpose of Independent Verification & Validation (IV&V) |
| 15 | **Describe the rationale and approaches to data management that support DoD Net-Centric operations.** |
| | Identify the key attributes of Net-Centricity |
| | Describe the DoD's Net-Centric data management strategy |
| | Summarize DoD's Net-Centric data management strategy goals |
| | List DoD Net-Centric data management primary activities and summarize what they mean to the PMO |
| | Identify key program management and acquisition requirements needed for Net-Centric data management |
| 16 | **Given commonly used estimating techniques, model descriptions and input parameters, describe an integrated process that can be used for software cost and schedule estimation.** |
| | Describe common software cost estimation methods |
| | List factors most influencing software cost and schedule estimates |
| | Summarize how parametric models work |
| | Identify commonly-used parametric models |
| | Describe a typical software estimation process |
| 17 | **Given a notional software-intensive system, identify computer resource planning and support issues and describe software plans and standards relevant to software support.** |
| | Define the components of software support |
| | Identify essential life-cycle information and software supportability planning activities |
| | Describe how Integrated Product Teams (IPTs) help improve software support planning. |
| | Recognize contents of typical computer support plans |
| | Explain how Reliability, Availability and Maintainability (RAM) differ between hardware and software |
| 18 | **Given a typical software-intensive system, identify key issues that should be considered a part of the contracting process for that system** |
| | Describe the conditions under which "Modular Contracting" should be used |
| | Identify contract types most suitable for information and software-intensive systems |
| | Outline the critical considerations and requirements that should be a part of RFP planning for information and software-intensive systems |
| | Describe what the DoD Enterprise Software Initiative is and under what conditions it should be used |
| 19 | **Explain typical "Best Practices" for software-intensive systems** |
| | Identify typical Best Practices |
| | Summarize course materials |
| | Recognize other relevant IT and SAM courses |